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Final Technical Report for NAG 5-1687

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1 Introduction

Grant NAG 5-1687 covered four investigations proposed using data from the *ROSAT* X-ray satellite.

- *Precise Position Determination of the X-ray/Gamma-Ray Source 1E1740.7-2942*
- *ROSAT Investigation of the Galactic Center Source 1E1740.7-2942*
- *Pulsars and Neutron Stars in the Globular Clusters M15 and M3*
- *A Study of the Globular Cluster M15 Using the ROSAT HRI*

Although the 1E1740.7-2942 and M15 investigations were approved and scheduled, only the first two observations were carried out. Spacecraft malfunctions and scheduling difficulties prevented the M15 and M3 observations from being made.

2 Investigations of 1E1740.7-2942

This source was successfully observed by both the HRI and the PSPC. Following successful determination of the position with the initial HRI pointing, a follow-up observation was made with the PSPC in an attempt to determine the spectral characteristics of the source and determine the column depth to

the source. The HRI observations were made during the period March 20-24 1991 and the PSPC observations were made during the periods September 28-October 4, 1992 and March 23-28, 1993. A total of 19,900 s of observations were made with the HRI and 28,230 s with the PSPC.

The results of the ROSAT observations are described in detail in a published paper and a Ph.D. thesis:

- “Observations of 1E1740.7-2942 with ROSAT and the VLA”, W. A. Heindl, T. A. Prince, and J. M. Grunsfeld, *The Astrophysical Journal*, **430**, 829 (1994).
- “Multiwavelength Observations of the Black Hole Candidate 1E1740.7-2942”, Ph.D. Thesis at the California Institute of Technology, by W. A. Heindl (1994).

The article from the *Astrophysical Journal* referred to above is included as an appendix to this report and contains technical details and scientific discussion of the ROSAT observations.